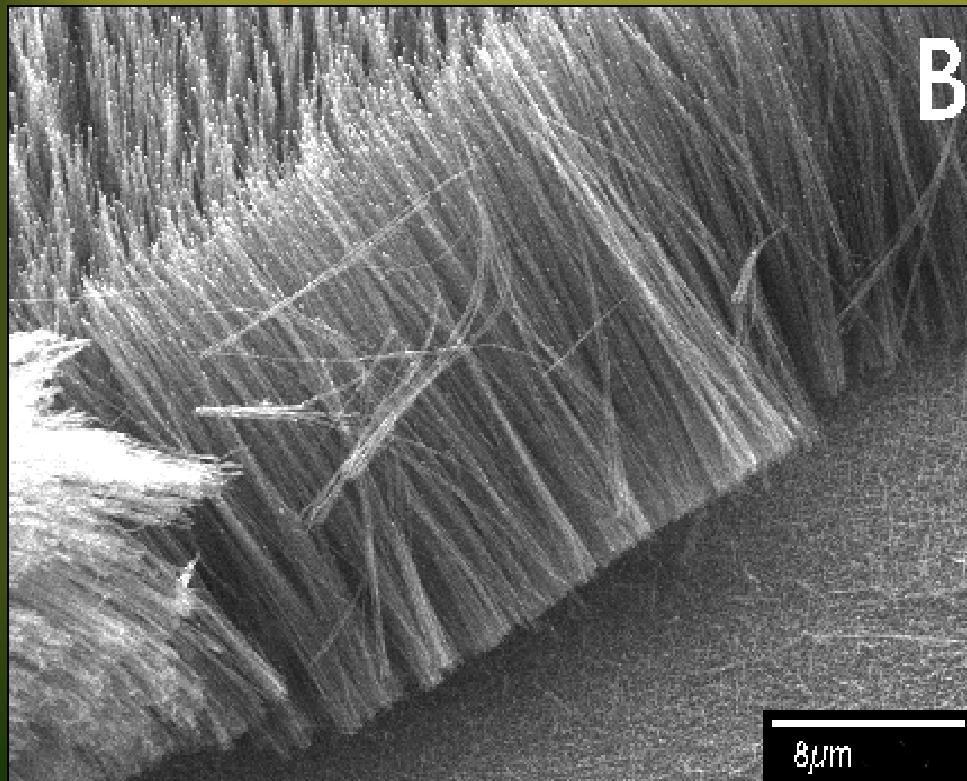


Bucky Fur as Thermal Material

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“Bucky Fur” ...



B ... aligned film of
Carbon Nanotubes
attached to a
metal substrate

REPORT DOCUMENTATION PAGE

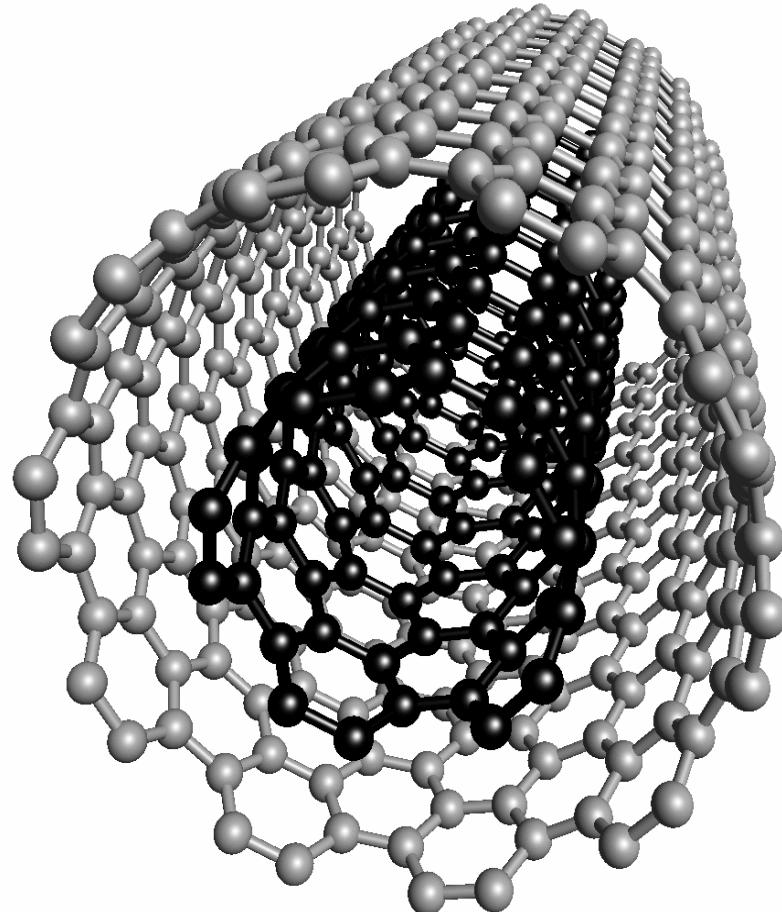
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Unique properties of carbon nanotubes



- 1-20 nano-meters in diameter
- Atomically perfect
- Chemically inert
- 100 times stronger than steel
- Extremely high melting temperature
- Conduct heat efficiently
- Conduct electrons efficiently
- Can be filled with molecules
- Non-toxic

High heat conductivity of nanotubes

- ◆ Nanotubes may help solve the heat problem:
Efficient conductors of electrons and heat
- ◆ Record Heat Conductivity:
 - * Diamond
(isotopically pure): 3320 W/m/K
 - * Nanotubes: 6,600 W/m/K (theory, SWNT)
 $>3,000$ W/m/K (experiment, MWNT)
(room temperature values)

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Thermally Conductive Bonds

Nano-Velcro: Bonding at the nanometer scale

Engage



Disengage



Mating nanotube elements

- Strong, permanent bonds
- Self-repairing bonds
- Chemically inert and non-toxic
- Thermally stable
- U.S. Patent applied for (Tomanek/Enbody/Kwon)